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ABSTRACT

The most feasible method for constructing a Navajo population register was to produce a preliminary register from data contained in existing records and to perfect and extend this register either through subsequent clerical and record-accumulating operations, the existing school census operation, a special program of field enumeration, or a combination of these. Tests indicated that records in the Window Rock Office of Vital Statistics (i.e., 1940 Roll, numerical card file, birth and death certificates, sub-agency school census records, etc.) could be converted to a "birth certificate" system and that the resulting record would identify about 80% of all reservation Navajos by name, census number, year of birth, sex, tribe, father and mother's names and numbers. Another 15% would be identified by name, number, sex, year of birth, tribe, and, in most instances, by some information on one or both parents. However, these records contained no residence and origin data and lacked reliable vital status information. In order to correct any deficiencies, it was recommended that data be transcribed and converted to a system of individual tape or punched card records and that automatic data processing techniques be employed in a matching operation with sub-agency school census records in order to secure from them the information they contained on residence and vital status. A remaining serious weakness was a lack of knowledge of the vital status of about 35% of the individuals in the record and of the residence of large numbers of off-reservation Navajos. (NQ)

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Methods and Resources for the Construction and Maintenance of a Navajo Population Register

By
William H. Kelly

A Report Prepared for the
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INTRODUCTION

This is a progress report on a study to determine the feasibility of various methods for constructing a Navajo population register.

For the past six years the Bureau of Ethnic Research, with financial support from the National Cancer Institute, the Bureau of Indian Affairs and the University of Arizona, has been engaged in population research as it applies to non-industrialized societies generally and to Southwestern Indian tribes in particular. The central interest is not in census taking, as such, but in securing population data as a basis for a wide variety of medical and social science studies. In the course of this work we have constructed population registers for the Papago, Pima, Maricopa, Mohave and Chemehuevi tribes in southern and western Arizona. The present Navajo study represents a continuation of this research with special emphasis upon the problems created by the much greater size of the Navajo Tribe.

Purely qualitative or poorly controlled quantitative studies will not provide the kind of knowledge demanded as the medical and social sciences become more refined in theory and objectives. It no longer adds to our knowledge to know that morbidity rates differ from one ethnic group to another or that some members of a primitive or peasant group retain their folk beliefs and some do not. To understand the factors associated with these occurrences we must have quantitative as well as qualitative data and, for most purposes, this can only be secured through the use of sampling techniques. We must, therefore, be able to identify any population under study. In the case of Indian tribes we must know who the members are and we must know something about their general demographic and sociological characteristics.

But a population register has administrative as well as research uses. The Bureau of Indian Affairs, as trustee of the property of individual Indians must know the names and whereabouts of the beneficiaries of the trust; the Public Health Service,

charged with providing medical services to Indians, must sooner or later know who is entitled to these benefits; the reservation superintendent, charged with planning for the improvement of social and economic conditions on a reservation, must know who the tribal members are, where they are, and what their condition is. Tribal officials must have a wide range of knowledge of tribal members if they are to govern effectively.

There is universal agreement with respect to all these matters and the problem has not been neglected. The Bureau of Indian Affairs and the various Indian tribes have attempted for many years to maintain tribal rolls. Their lack of success is not a measure of carelessness or neglect, but a measure, as we discovered, of the very real difficulty of the task. Even as recently as ten or twelve years ago, when there were not enough classrooms ~~to~~ or teachers for Indian children, and when hundreds of Indians with serious illnesses could not be treated for lack of hospitals and doctors, the crudity of a tribal roll was a relatively minor problem for administrators. That day is now ended, and the time has come for a final attack on the Indian problem. This will involve programs and policies designed to remove the social, economic and health barriers which place Indians, as a group, far below their white neighbors in standard of living. Fundamental to such effort will be a precise knowledge of the Indian populations involved.

Population Registers.

The difference between a census and a population register or tribal roll must be clarified. A census is ordinarily the periodic enumeration of the people who are living in a given area at a given time. Identification is by name, address, sex, age and membership in a given household. No attempt is made to establish positive identification of the individuals enumerated and there is no mechanism for maintaining the census record through time. A census is, therefore, out of date and unreliable after a span of time because both residence and household composition are subject to constant change.

A population register, on the other hand, is a permanent record which identifies individuals no matter what name they use, where they may be living at the moment, or what family they may

be living with. It must therefore be based upon personal identifying characteristics that do not change. In this respect it is a vital record similar to a birth certificate. To the basic identifying items, of course, may be added any desired descriptive data: residence, marital status, education, employment and so forth.

A tribal population register must provide two types of identification. It must identify an Indian as a member, or as the descendant of a member, of a specific tribal group, and it must identify the individual as an individual.

In the case of the Navajo a more than ordinary attempt has been made to identify and register tribal members. Census clerks, in the field or in the office, have prepared documents of tribal enrollment, and have issued census numbers to individuals, who have declared themselves to be members of the tribe. Records of this nature have been accumulating since 1928 in various sections of the reservation and, more recently, in the Window Rock Office of Vital Statistics. A Navajo is, therefore, any person who can be identified from the record and for whom a census number has been issued. The identification of other individuals as Navajos will be possible through their kinship affiliation with enrolled members. The question of legal enrollment is another matter which can only be decided by the Navajo Tribal Council.

Individual Identification.

The key to the construction, maintenance and use of a population register, or tribal roll, lies in matching operations. An individual record must be matched against an existing list, or two lists must be matched against each other.

In the construction of a register, new individuals, whether picked up in the field or from other records, must be matched against a master record to determine whether or not the person has already been enumerated. Use of the register, as well as its maintenance, will depend almost entirely upon matching. School lists, for example, will be matched against the register or some section of the register, to determine how many Indian

children, are not in school, and who they are. Eligibility for tribal benefits, for old age assistance, and countless other types of information will be secured through reference to the register. For research purposes, the register will represent the universe of tribal members from which samples may be drawn and the individuals identified.

Matching, of the kind discussed above, is normally accomplished by using name, sex, date of birth and residence as identifying criteria. This is true, however, only in those societies where individuals adhere to a surname system, normally retain the same name through life, remember and record the same date of birth on all occasions, and live in areas where residences can be located by house number and street name or by rural mail delivery box numbers. Even where these conditions hold true, however, legal identification ultimately rests upon a birth certificate where fathers and mothers are identified through name, age, residence, occupation and place of birth.

The identifying criteria of name, age and residence are either variable or absent in Indian society, and this is especially true of the Navajo. Indians do not always use their father's surname; many are known to use different names at different times; the older people, particularly, do not always know their birth date, and there is no system on most reservations, including the Navajo, for the identification of specific residences.

Identification adequate for matching is thus either absent or variable. To solve the problem a system of identification by kinship has been developed which we have come to refer to as the "triangle" system. This calls for the placement of every individual in a kinship triangle composed of himself, his father and his mother and contrasts with the census system where an individual is identified only by the head of a household who may or may not be his father or mother.

When an individual is identified through a specific relation of kinship with another person this fact may be used as another item of identification (such as name or date of birth) or it may be used, as fingerprints are used, for positive identification. By identifying

an individual with his mother and father, for example, he is automatically identified with all his brothers and sisters and their children, with his parents' brothers and sisters and their children and with his grandparents. The net spreads as far as any genealogist would care to take it. No other person can have these specific kinsmen in these relationships.

In practical application, therefore, the identification of a member of an Indian tribe through his name, year of birth, sex, last known residence, name of the father and maiden name of the mother has been found necessary. This is, in fact, the information contained on a birth certificate.

Knowing full well that Indians change their names and thus may appear on two records under two different names; that many do not know their birth date and are therefore given a different year of birth by every clerk they encounter, it yet remains difficult for non-Indians to understand and appreciate the detailed identifying information that must be secured if one tribal member on a list is always to be distinguished from every other member. The problem is not merely to distinguish one John Yazzi from among three or four John Yazzis, but to know that any person on the list, no matter what name is used, is the person being searched for. Information on both records in a matching operation must be such as to exclude the reasonable possibility that one person has been mistaken for another.

For several years there has been a backlog of unprocessed birth certificates in the Navajo Office of Vital Statistics because of the heavy demand this task makes upon clerical time. The difficulty arises because, even though each parent is identified on the certificate by name, age, residence and occupation, many cannot be located with certainty in the roll books. Residence and occupation are not available in the roll books, but are subject to change in any event. Matching by name and age alone cannot be accomplished because no clerk would dare declare Jim Morgan, age 26, as being the same person as a Jim Morgan, age 26, in the tribal roll. The matching can only be done on the basis of supplementary evidence.

There is only one answer to the problem of economical matching. Individual identification, on various records, must be symbolized in a number and the number, wherever used, must represent positive identification. The importance of Navajo tribal membership will undoubtedly grow through the coming years at the same time that problems of identification increase. Navajos are moving into the surrounding society in increasing numbers and are marrying non-Indians and non-Navajos with increasing frequency. As this continues and the population grows, the maintenance of a tribal roll will become more difficult. The only possible answer to this will be a system of enrollment which depends upon the recording of a birth certificate and the issuance of census numbers only on the basis of a birth certificate which ties the individual to parents of known Navajo descent.

Census Numbers.

Great dependence has been placed since 1928 upon the use of Navajo census numbers for the purpose of identification. The present study will show that the use of numbers in matching one record against another will prove to be indispensable, but that the use of a number by a Navajo for the purpose of self identification cannot now be relied upon.

The use of a number for matching purposes assumes that it identifies the same person in all instances. The number on a gasoline credit card, for example, symbolizes the identification items in the company's records. The system would break down if the company expected its customers to remember their account numbers and, in fact, they do not even trust the copying of a number from the credit card to the charge slip. A device for printing the number is used. The same error potential exists in the use of Navajo census numbers for purposes of identification.

Even if it were possible to issue membership cards with embossed numbers to all Navajos, the problem of numerical identification would not be solved since it is problematical whether or not they would be used. The answer lies in clerical control. When a Navajo is entered on any record and identified by number, the clerk must be sure that he is dealing with the same person

who is recorded under that number in the population register or tribal roll. In final analysis he can only be certain of this through reference to the identifying characteristics recorded at the time the number was issued.

Acknowledgements.

In our Navajo studies we have had the wholehearted cooperation of Bureau of Indian Affairs and Navajo tribal officials. Individuals from both organizations have given us the benefit of their long experience in enumeration problems and have given us a great deal of time in conferences and informal discussions. The Bureau of Indian Affairs made both an office and office equipment available to us. Tribal officials were most generous in providing us with transportation when our own equipment was unsuitable. In addition, office supplies and printing, unavailable locally, were generously provided to meet unexpected needs.

We are especially indebted to Mr. Wilbur Morgan, head of the Navajo Office of Vital Statistics, who not only gave us the benefit of his long experience in Navajo census work, but who most graciously gave us both time and space in his already crowded and very busy office.

Many individuals associated with the National Cancer Institute and the Bureau of Ethnic Research have had a hand in the gathering of the material for this report. William Haenszel and Robert Hackoberg of the National Cancer Institute both took a direct part in planning the study and in helping us solve certain problems as the work progressed. Research assistants who have taken part in the study include Peter Hemingway, Craig Hendrikson, Olen Leonard, Elmer C. Long, Amnon Orent and Aubrey Williams. Their contributions, both in planning and execution, have been most helpful and their work on the reservation, often under most difficult conditions, is greatly appreciated. For assistance in the preparation of this manuscript I owe a special debt to Patricia Anderson who never looks at a clock.

Tucson, Arizona
March 15, 1964

THE CONSTRUCTION OF A NAVAJO POPULATION REGISTER FROM THE 1940 ROLL

In the construction of a Navajo population register, or tribal roll, we are suggesting that the most feasible method will be to produce a preliminary register from data contained in existing records and to perfect and extend this register either through subsequent clerical and record-accumulating operations, through the existing school census operation, through a special program of field enumeration, or through a combination of these methods.

Experience gained in the construction of our Papago, Pima and Colorado River registers, plus studies conducted for this project, demonstrate that where records will permit the positive identification of individuals they should be used to build a preliminary register before field work is undertaken. It will be shown that this is the only feasible procedure in the Navajo case and that the construction of a register from field work alone (given existing records and the existing organization for maintaining these records) would be unthinkable.

Identifying Criteria.

Necessary identifying criteria for the construction of a Navajo population register have been discussed above. To these may be added the Navajo census number since this is used in almost all Navajo records. The first question, therefore, is where to start in the records, i.e., which of the records is most complete and which of the records provides, with acceptable consistency, all or most of the required identifying items. Our studies indicate that the most complete and accurate records, for the purpose at hand, are in the Window Rock Office of Vital Statistics. They are also the only records on the Navajo population as a whole which contain data on kinsmen which go back two and three generations. Information on year of birth is present in all but about three percent of the cases and is even more complete for individuals born during the last twenty years. A special quality which recommends the use of records in

the Office of Vital Statistics lies in the fact that recorded names and census numbers have been declared "legal" and, therefore, correct. The authority, or accuracy, of one record over another has been difficult to determine in our work with the Pima and Papago. This will not be the case, insofar as name and number are concerned, in the Navajo project.

Records in the Office of Vital Statistics are weak in two respects. Neither the residence nor the origin of individuals may be determined and the record is choked with individuals who have died but who are carried as living.

History of the 1940 Roll.

If the records in the Office of Vital Statistics are to be used as the basis for the construction of a Navajo population register, it is necessary to determine which of the records to use initially. A history of the accumulation of the records will answer this question and also provide background information for other purposes.

All records are based upon a reservation-wide field census conducted in major part in 1928 and 1929 but continued through the succeeding five or six years. These records are referred to as the "1928 Roll" and consist of roll books containing, in all but two cases, name, census number, age, sex, district of residence and relationship to the head of the household. Supplementary records are a numerical card file with census number, name, name of the head of the household and fingerprints, and a numerical family card file with the name and number of the head of the household, the name and the number of other members together with their relationship to the head of the family.

This was the initial occasion for the issuance of census numbers to Navajos and the system has been kept intact to the present time so that the ancestors of living individuals may still be identified according to the numbers originally issued to them. It is estimated that the 1928-1929 records contain the names and numbers of about 40,000 Navajos.

Through the years from 1929 to 1940 additions were made to the Roll as new individuals came to the attention of census officials.

In 1939 and 1940 the 1928 Roll, with additions but with known deceased deleted, was typed and bound in seven district volumes, each arranged alphabetically by head of household, and containing about 52,000 entries. Data on each individual is as follows: cross reference number, name, sex, age or date of birth, tribe, degree of Indian blood, marital status, relationship to head of household, jurisdiction or district where enrolled and census number. Supplementary records included the numerical card file and numerical family card file, mentioned above, which were kept up to date, and a numerical cross index which would locate an individual, identified by number, on the page in which he appears in the 1940 Roll.

The official tribal roll has thus been the 1928 Roll and its later version, the 1940 Roll. This system has been continued to the present time and the 1940 Roll has been kept up to date as the master register and final authority for the identification of Navajo Indians. Every effort has been made to correct and maintain this record and its completeness and greater accuracy, when compared with other records in the office, was confirmed by our studies.

Maintenance of the 1940 Roll has been by process of correction and addition but not deletion. Deceased Navajos are so noted, but not removed from the record. Additions have been made by adding new sheets to the Roll, leaving the original 1940 typed sheets intact and unchanged.

The most valuable current supplementary record is the numerical card file which has been kept up to date and greatly improved upon by adding the following information: date of birth, parents names and parents census numbers. The numerical family card and the numerical cross-index record have been dropped. In their place an alphabetically arranged rotary card file has been added. This was devised for no other purpose than to give the clerks a ready source of information on individuals known by name only since, because of additions, the alphabetical quality of the 1940 Roll has deteriorated. The alphabetical arrangement, however, is by family head so that there does not exist a true cross-index of Navajo names and numbers. Extended kinship data is not available in the rotary file and it is not so carefully kept, nor as complete, as the 1940 Roll. Data includes name, census number, sex, date of birth, relationship to head, and marital status.

Another supplementary record is the file of applications for census number. This was found to be both incomplete and inaccurate when compared with the 1940 Roll.

The nature of the records thus indicate that an initial register could be constructed either from the numerical card files or the 1940 Roll. A recommendation to use the 1940 Roll is based upon the following: tests have shown that the 1940 Roll is more complete and accurate and that supplementary notes provide information on parentage not available in the numerical card file. More important than this, necessary identifying information was not systematically entered on the numerical card except for individuals enrolled during very recent years.

INFORMATION AVAILABLE FROM THE 1940 ROLL

Since it is our conclusion that an initial population register should be constructed from the information contained in the 1940 Roll, its nature and contents will be described in detail. Information to follow will include:

1. An estimate of the number of individuals, living and dead, enumerated in the 1940 books.

2. The percentage of individuals who can be identified by name, census number, year of birth, tribe or race, father's name and census number and mother's name and census number.

3. The completeness and accuracy of the 1940 Roll when compared with other records and with field tests.

Number of Individuals

In three samples, totaling 119 "Roll units" out of a total of 3,554 in the 1940 Roll, 6,464 entries were recorded.* This is an average of 54.3 entries per unit giving a total of about 193,000 entries in the Roll.

*To discover the extent of information to be secured from the 1940 Roll and to determine the time required to transcribe the information, three samples were drawn from the Roll books. Since the record is an historical one it was important to secure a random sample from all time periods. This was accomplished by selecting as the sampling unit each original page with its additions. The system of maintaining the books is one in which original pages were kept intact and additions made by inserting extra pages which are attached to the original page. These extra pages, as a general rule, contain the names of individuals who are patrilineal lineage relatives of families on the original page. The exception to this is that a daughter, starting a new family, is placed on the extra page (Continue on next page.)

TABLE I

Calculation of Total Roll Book Entries

	45 Unit Sample	43 Unit Sample	31 Unit Sample	Combined Samples
Number of Units in Sample	45	43	31	119
Total Entries in Sample	2,461	2,501	1,502	6,464
Average Entries per Unit	54.7	58.2	48.5	54.3
Approximate Entries in 3,554 Units	194,404	206,843	172,369	192,982

A calculation of repeated entries gives us the total number of individuals now listed in the 1940 Roll. Repetitions occur when an individual, already in the Roll, is listed as a member of a newly formed family. The most typical case is where a son or daughter, listed on one page, reappears as the head or wife of a new household. Any change in the composition of a household, however, may produce a repetition: a divorced or widowed man may start a new household, a sister in one household may become the wife in another, a son may go with his father and be repeated as a son in the new household, etc. Repetitions found in the three samples are reported in Table 2.

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with her husband next to the husband's father's original page. Since there were 3,554 original pages in the 1940 Roll there are now 3,544 "Roll units". The large number of entries in each unit is accounted for by the fact that more than one family was listed on each of the original pages. For the first sample we selected each eightieth unit in the Roll making a total of 45 sample units. For the second sample we took 43 consecutive units in one of the Southern Arizona volumes and for the third sample we took 31 consecutive units in another of the Southern Arizona volumes.

In the three samples an estimate of 524 repetitions was secured for 119 units out of a total of 3,554 or an average of 4.4 repetitions per unit. This gives approximately 15,500 repetitions. Deducting this number from the estimated 193,000 entries gives a total of 177,500 Navajos for whom records are available.*

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* 390 actual cases of repetition were encountered in the sample. This has been corrected to 524 to take into account a known bias in the sample. As mentioned in the preceding footnote sons forming a new family are attached to their original page but daughters are attached to their husband's original page. This brings it about that we have a random sample of sons, but not daughters. To correct for this we equated the number of daughter-mother repetitions with the actual number of son-father repetitions encountered.

TABLE 2

Number and Percentage of Each Type of Repetition

Type of Repetition	Combined Samples	
	Number	Percent
Father as father	52	.86*
Mother as mother	27	.49
Son as son	12	.20
Daughter as daughter	24	.40
Stepdaughter as stepdaughter	1	.02
Son as father	185	3.07
Daughter as mother	185	3.07**
Stepson as father	8	.13
Brother as father	2	.03
Grandson as father	2	.03
Stepdaughter as mother	8	.13
Sister as mother	1	.02
Granddaughter as mother	1	.02
Stepson as son	4	.07
Daughter as stepdaughter	3	.05
Daughter as granddaughter	1	.02
Grandstepdaughter as mother	1	.02
Mother as mother-in-law	1	.02
Mother as sister-in-law	1	.02
Nephew as father	1	.02
Single male as father	1	.02
Grandnephew as father	1	.02
Sister as stepdaughter	1	.02
Grandson as stepson	1	.02
Total	524	8.70

* Total number of cases 6,020. Original number 6,464 less 106 non-Navajos and DBE (deceased before enrollment) and 338 without census number.

** Estimated from number of son-father repetitions.

Duplications.

There are suprisingly few duplications of census number in the Roll. As shown in Table 3 below, only eight cases (0.15%) of two different individuals with the same census number were found in a total of 5,496 cases where this could occur.

Vital Status.

From our point of view, the greatest weakness of the Office of Vital Statistics operation is that there has been poor reporting of Navajo deaths with the result that the 1940 Roll is burdened with deceased Navajos still recorded as living.

In a sample of 1,373 Navajos we found a total of 76 individuals marked "deceased". This is 5.54%. In a total listing of 177,500 Navajos we would therefore expect 9,800 to be recorded as deceased. The total living would therefore be approximately 167,000, an impossibly high figure.

Name.

In order to control the Navajo custom of changing personal names and using alternate names, the surnames and given names of Navajos as recorded in the 1940 Roll have been declared "legal" and a change of the name in the Roll cannot be made without an authorization from the tribal court. The same, of course, holds true for the census number.

This system permits us to consider the Navajo name, as it appears in the Roll, as the "real" name and all other names used by the individual as "aliases".

It does happen, however, that an individual listed on two different pages and in two different families in the Roll may be recorded under two different names but with the same census number. This occurred eight times in 83 cases of repetition in our sample of 31 units.

Changes in women's names brought about through marriage will present difficulties. The register must employ maiden names since, eventually, it will be maintained principally from the processing of birth certificates. Until court records of marriages and divorces are stabilized it will be necessary to maintain an "alias" file which will lead from a current married name to the maiden name in the register.

Year of Birth.

Year of birth will be missing for about four percent of the individuals listed in the Roll. Our data on this point is in Table 3.

Because information on parents will be unobtainable from the 1928 or 1940 Roll for those individuals born before 1910 the number and percent of such individuals is given in Table 4. We have also noted the number and percent of individuals for whom birth date is unknown and added this to those born before 1910 on the assumption that year of birth is most apt to be lacking among the older people.

TABLE 3

Number and Percentage in 1940 Roll with Year of Birth

	31 Unit Sample
Total Navajos*	1,354
Year of Birth	1,298
Percent with Year of Birth	96%

* 1,502 in sample less 19 Non-Navajos and 129 repetitions.

TABLE 4

Number and Percentage in 1940 Roll

Born Before 1910

	31 Unit Sample
Total Navajos	1,354
With Year of Birth Before 1910	132
Percent	10%
With Year of Birth Before 1910 and Year of Birth Unknown	188*
Percent	14%

* Year of Birth Unknown 56.

Census Number.

Approximately 94% of all entries in the 1940 Roll carry census numbers. This is not including non-Navajos and Navajos who died before coming to the attention of census clerks (our DBE category) for whom census numbers are not issued.

The largest percentage of individuals without census numbers are those that have been recorded from birth certificates. In some instances the father and the mother, not located in the Roll, are entered without number. In all instances the infant is entered without number since the Office of Vital Statistics no longer issues numbers and it is necessary for parents to secure an application for enrollment of the infant through one of the Navajo Sub-Agency census offices. For purposes of data processing all individuals in the Roll, Navajo and Non-Navajo, must be given "working" numbers where census numbers are lacking.

TABLE 5

Number and Percentage of Navajos with Census Numbers

	45 Unit Sample	43 Unit Sample	31 Unit Sample	Combined Samples
Total Navajos	2,263*	2,229**	1,342***	5,834
With Census Numbers	2,133	2,107	1,256	5,496
Percent	94%	95%	94%	94%

* 2,461 in sample less 46 Non-Navajos and DBE, and 152 estimated repetitions.

** 2,501 in sample less 29 Non-Navajos and DBE, and 243 estimated repetitions.

*** 1,502 in sample less 31 Non-Navajos and DBE, and 129 estimated repetitions.

Parents' Names and Numbers.

Identification of individuals through their kinsmen is considered complete when we have the name and number of an individual, the name and number of his father and the name and number of his mother.* With this so-called "triangle" information on all living individuals in a population it is possible to identify them not only with their parents but with their full and half siblings and with many of their cousins, uncles, aunts and grandparents. If triangle information is also available for individuals in the ascending generations, both living and dead, it is possible to locate each living individual in his total context

* The Roll lists each individual as a member of a household and as the head of a household (man or woman) or in terms of relationship to the head. Neither in our Pine Springs study nor in our field genealogy study have we found a single instance where the "wife" is not the mother of individuals listed as sons and daughters of the head. There are certainly cases where a son or daughter is the stepchild of the wife but we have not encountered this.

of patrilineal and matrilineal lineage kinsmen.

To assess the value of the 1940 Roll for the purpose of identifying individuals by kinship we need to know the percentage of individuals who can be identified by name and number of parents. Data on this is presented in the following four tables.

Table 6 shows the increasing completeness and accuracy of data on parentage in recent years. During the initial decade (1914-1923), when data on parentage should be available, we find both parents missing in 55% of the cases. During the last decade (1954-1963), on the other hand, no individuals are recorded without at least one parent and 81% have the names and numbers of both parents.

The reason for a 15% to 20% deficiency in parents' names for individuals born during the last two decades is to be found in Table 7. This table is by category of relationship and shows that parentage of "offspring" is available for more than 90%, irrespective of date of birth, while parentage of "others", i.e., grandchildren, nephews, nieces, etc., drops to 15%. This is a result of the manner in which the records are kept and, for recent decades, the deficiency could be corrected in part from data in the numerical card file.

TABLE 6

Parental Identification by Year of Birth - 31 Page Sample

Year of Birth	Cases	Both Parents' Names & Numbers		Father's Name & Number Only		Mother's Name & Number Only		1 or 2 Parent Names Only		Both Parents Missing	
		No.	%	No.	%	No.	%	No.	%	No.	%
1954 to 1963	282	229	81	13	5	30	11	10	4	0	0
1944 to 1953	266	226	85	8	3	15	6	7	3	10	4
1934 to 1943	263	178	68	5	2	19	7	6	2	55	21
1924 to 1933	189	86	46	2	1	33	17	2	1	66	35
1914 to 1923	162	43	27	4	2	26	16	0	0	89	55
1909 to 1913	63	10	16	0	0	9	14	0	0	44	70
Before 1909	118	2	2	1	1	3	3	0	0	112	95
Year Unknown	43	5	12	0	0	0	0	2	5	36	84
Total	1,386*	779	56	33	2	135	10	27	2	412	30

* 1,502 entries less 31 DBE and Non-Navajos and 85 repetitions and duplications.

TABLE 7

Parental Identification - 45 Unit Sample

Category	Cases	Census Number	%	Father Number	%	Mother Number	%
Father	370	313	85	52	14	52	14
Mother	438	397	91	19	4	19	4**
Offspring*	1,478	1,442	98	1,339	91	1,424	96
Stepchild	54	53	98	17	31	54	100
Others	131	128	98	7	5	20	15
Offspring DBE	33	0	0	25	76	25	76
Total	2,517	2,333	93	1,499	60	1,684	65

* Twelve children had non-Navajo fathers and 9 children had non-Navajo mothers. 40 offspring had neither parent.

** The sample bias automatically gives us fewer parents of mothers.

Identification of lineage members will be possible in those cases where data on grandparents and greatgrandparents are available. No parentage data are available for individuals born before 1910. Those born after about 1920 will have parents' names and numbers in about 30% of the cases. Their children, born after about 1940, will be in a third generation and their children, born after about 1960 will be in a fourth generation.

An attempt was made to secure a quantitative measure on this point, but with only limited success. For the sample reported in Table 6 the children of individuals with one parent and the children of individuals with both parents were counted to discover the number of complete sets of grandparents that might be secured. The sample bias which obscured the actual number of daughter-mother repetitions, however, prevented us from gaining a complete picture. The actual findings were as follows:

Number of Individuals	Number of Grandparents
27	1
187	2
18	3
9	4

By equating the number of daughter-mother repetitions with the number of son-father repetitions, which will be the approximate case for the Roll as a whole, it is possible to say that we should have a count of about 364 with two grandparents and, in most cases, these will have four grandparents. This is about two-thirds of the individuals born since 1943

The data presented above represent the minimum level of kinship identification to be expected. When the complete Roll, as opposed to a sample, is processed and when data are limited to living members of the tribe, a much higher percentage of information on parents will be available. This is borne out by our Pine Springs study where a search through the entire Roll and other records in the Office of Vital Statistics was made to locate the parents of individuals picked up in the field. The results of this study are given below.

TABLE 8

Identification of Individuals by Name, Number and Parentage. Pine Springs Study of Living On-Reservation Navajos

Category	Cases	Field No.	Field %	O.V.S.* No.	O.V.S.* %	S.C.** No.	S.C.** %	I.B.M.*** No.	I.B.M.*** %
Name	445	445	100	433	97	357	80	259	58
Number	445	406	91	432	97	337	76	253	57
Both Parents									
Name	445	427	96	367	82	153	34	91	20
Number	445	375	84	356	80	148	33	89	20
Father Only									
Name	445	11	2	9	2	15	3	14	3
Number	445	7	2	7	2	17	4	12	3
Mother Only									
Name	445	2	1	31	7	61	14	46	10
Number	445	26	6	34	8	57	13	45	10

* All records in the Window Rock Office of Vital Statistics.

** Record on the Pine Springs District only from the sub-agency school census office.

*** Tabulation of Pine Springs residents only from the I. B. M. cards in the Gallup Area Office.

As will be noted, the names and numbers of both parents of Navajos now living on the reservation are available in the Office of Vital Statistics in about 80% of the cases in this survey. Names and numbers of one parent are available for another 10%.

In another tabulation from this same study it was found that names and numbers of parents of heads of existing families are

available in the Office of Vital Statistics in about 57% of all cases, names and numbers of parents of mothers are available for 70%, names and numbers of parents of offspring are available for 90%, names and numbers of parents of stepchildren are available for 88% and names and numbers of parents of other dependents are available for 60%.

It must be pointed out that our Pine Springs data are from a small section of the reservation with a total population of only 445. In addition to being a relatively small sample of the entire reservation population there is no way of knowing how our Pine Springs information might compare with similar information secured in some other area.

Identification of Off-Reservation Navajos.

Information on 173 off-reservation relatives of Pine Springs residents was secured in field work. Their identification in Office of Vital Statistics records, School Census records and I. B. M. records is given in Table 9. It is interesting to note that identification by number is more complete in Office of Vital Statistics records than in our field notes. This reflects the inability of informants to remember the census numbers of their relatives.

TABLE 9

Identification Items for Off-Reservation Navajo
Pine Springs Study of Living Navajos.

Category	Cases	Field No.	Field %	O.V.S. No.	O.V.S. %	S.C. No.	S.C. %	I.B.M. No.	I.B.M. %
Name	173	173	100	138	80	95	55	39	23
Number	173	89	51	129	75	70	40	38	22
Both Head and Wife									
Name	173	120	69	109	63	31	18	6	3
Number	173	52	30	95	55	24	14	6	3
Head Only									
Name	173	5	2	7	4	0	0	0	0
Number	173	19	11	8	5	0	0	0	0
Wife Only									
Name	173	7	4	12	7	9	5	6	3
Number	173	42	24	27	16	0	0	6	3

Eighty percent of the off-reservation Navajos enumerated were located in the Roll by name and 75% by number. In this instance it is certain that the lower percentage traces in large part to our inability to match Navajo names collected in the field with Navajo names of the same individual as recorded in the Roll. We had census numbers for only 51% of our off-reservation group as opposed to 91% of our on-reservation group.

False Enumeration

Those errors which were found in the record and which could be checked against other record material or in the field were found to be of a minor nature and quite easily reconciled or

adjusted. We expected that enumerators and office clerks would confuse the true relationships among members of households, but this did not turn out to be the case and we discovered no errors in this area. Cases of duplication, i.e., two persons recorded with the same number, are in the order of less than two per thousand entries. There are differences between names, numbers and dates of birth between the Roll and information picked up in the field. Since the Roll name and number have been declared "legal" the Roll entry must be considered the accurate one. Except where birth certificates are available there is no standard against which to measure errors in date of birth. Discrepancies in this category which turned up in the Pine Springs field study came to about two percent.

Deficiencies in the 1940 Roll.

In addition to the incomplete identification of many individuals listed in the 1940 Roll, its two greatest deficiencies, as mentioned before, lie in the absence of information on vital status and the absence of information on residence and origin.

Some information on origin is actually available but pertains only to those individuals who were originally enumerated in the Roll. When the new 1940 Roll books were prepared they were organized into seven districts as follows, each arranged alphabetically by family head:

1. Northern New Mexico
2. Western Arizona
3. Leupp
4. Eastern New Mexico (i.e., Eastern Navajo in west Central New Mexico)
5. Pinon
6. Southern Arizona
7. Southern New Mexico

This system broke down in favor of a practice of listing patrilineal lineage relatives together irrespective of residence when new individuals were added to the Roll. Data on family origins, however, can be recovered when the records are processed and individuals grouped into lineages.

THE TASK OF TRANSCRIBING THE 1940 ROLL

The information on individuals in the 1940 Roll must be transcribed onto tape or punched cards. This will accomplish a number of purposes, the least complex of which is the creation of lists of enumerated Navajos arranged alphabetically and numerically. For purposes of building a Navajo register it will be necessary to set up programs of automatic matching, both to manipulate the data in the Roll itself and to compare the Roll with other records. This can only be done efficiently and economically through the use of data processing equipment.

Ordering of the data will be necessary, among other things, for the determination of kinship, particularly in cases where the same individual appears both in a family of orientation and a family of procreation. Ordering the data will also be necessary in the production of a variety of printed lists which will be required in the building of a register.

Studies have been conducted to discover possible alternatives for transcribing the material in the 1940 Roll. The most efficient procedure would appear to be one in which clerks would copy directly onto ruled sheets designed for a key punch operation.

Because the Roll is in daily use, and because of the scarcity of clerical help at Window Rock, it may be necessary to photograph the Roll pages and have the copying done in a more populated area.

Some consideration was given to the proposal that a key punch operator could work directly from photographed pages. This was ruled out because the condition of the records is such that they would not photograph clearly and the necessity for a certain amount of interpretation or conversion of listed relationship data. In addition, the association of information under each column heading with a particular line entry is not always clear and this can and should be straightened out before reaching a card

punch operator. Frequently, also, a qualified interpreter could take advantage of a note written on a page to complete the identification of an individual.

Copying of the Roll onto individual cards, as opposed to the listing of individuals on sheets, was tested and rejected, as was the possibility of dictating the information onto a tape for later transcription.

Copying onto ruled sheets would save much time as, for example, when surnames are constantly repeated within a family and, similarly, where father and mother numbers are repeated for each offspring.

Most important is the fact that the sheet will resemble the Roll page so that it would be fairly simple to spot-check the clerks while copying and to make more complete check of sheets against Roll pages if this is found necessary.

Studies have shown that a copying rate of 40 minutes per "Roll unit" can be maintained with occasional rest periods. Another allowance of time must be made for reconciling conflicts and tracing missing data, either as a part of the copying work or as a later operation. There are 3554 units which would thus require about 3000 man-hours or approximately 375 man-days. A six man crew with one supervisor could probably accomplish the task in about three months.

Our study of possible procedures beyond this point has not yet been completed. Data to be recorded on tape or cards must be determined and the cost of this operation estimated. Previous experience indicates that, with the use of census and "working" numbers, automatic procedures can be employed for eliminating census number duplications and for grouping individuals into families and into patrilineal or matrilineal kinship units. In many cases duplications of names and other obvious internal errors will thus be revealed and eliminated.

The end result will be a duplication of the information on individuals in the 1940 Roll with detectable errors eliminated. Data will be in a form which will permit the relatively inexpensive production of lists arranged according to any of the categories of information used. The data will also be in a form which will permit automatic matching against any other record of Navajo Indians where individuals are identified by census numbers.

POSSIBLE ADDITIONS AND CORRECTIONS FROM OTHER RECORDS

The 1928 Roll.

There are six 1928 Roll books, all of which contain data on name, census number, age, sex and relationship to head of household except the Hopi area book which does not have census numbers and the Western Navajo book which does not have relationship to head of household. This missing data, however, could be secured from the numerical card file.

As mentioned above, the data in these books, except for those individuals reported as being deceased, was transcribed to the 1940 Roll. Any information in the 1928 Roll not contained in the 1940 Roll would, therefore, be limited and, insofar as the living are concerned, confined to data on parentage. On the basis of a sample of 600 entries in the 1928 Roll it was estimated that 7.5% of the sons and daughters in the 1928 Roll were listed in the 1940 Roll as heads or wives of households with a consequent loss of a knowledge of their parents. Another 4.2% had parents in the 1928 Roll who were not listed in the 1940 Roll. Presumably they were deceased in 1940. Thus, parents for about 10% of the individuals listed on the original pages of the 1940 Roll could be recovered through processing the 1928 Roll. The advantage of this operation would need to be balanced against the cost of processing the records.

The Numerical Card File.

The numerical card file, with approximately 175,000 individual records, contains some information not available in the 1940 Roll. Probably because the cards are handy when a census number is known, many deceased individuals were recorded as such on the numerical card and not in the 1940 Roll. In some instances children are recorded in the Roll without

parents. These parents and their numbers were occasionally found recorded on one or another of the children's numerical cards.

In most instances, however, the numerical cards would merely serve as a crutch in identifying individuals. Where, for instance, a series of names in the Roll cannot surely be matched with the list of census numbers written opposite them, the orientation can be secured through reference to the numerical file. In some instances it may be necessary to refer to the census number application forms for needed data. Because many of the later numerical cards record the number of the application, the card file can be used to locate the application.

Birth and Death Certificates.

At the time of our study about 3,000 birth and death certificates remained unprocessed. These individuals have been identified as Navajos by the registrar and the certificates, of course, would be indispensable in bringing the 1940 Roll up to date.

The difficulty in processing the above certificates lies in the fact that identification is by name, age, sex and residence only, with consequent loss of clerical time in matching against another record. The situation is made doubly difficult in the case of the 1940 Roll where there is no alphabetical list of individuals, but only a partially alphabetized list of family heads. If there is a choice, birth and death certificates should not be processed until the 1940 Roll is transferred to a system of individual records which can be arranged alphabetically and numerically.

The Sub-Agency School Census Records.

These are, in large part, independent records gathered through the years, but most intensively since 1957, in field enumeration operations conducted by school teachers and other personnel in the Branch of Education of the Bureau of Indian

Affairs. Only the living are enumerated and special attention is given to reservation families with school age or pre-school age children. Off-reservation families are thus poorly represented.

The adequacy of the record was tested in connection with our Pine Springs field work. Out of 445 individuals found living in the Pine Springs area, 357 (80%) were found by name and 337 (76%) were found by census number in the school census. This compares with 97% in both categories found in the Office of Vital Statistics and suggests that few additions to the OVS records would be made through a matching operation with the school census.

Because enumeration is by "households" there is an even greater weakness in school census data on parentage. Both parents were identified for 33% of the individuals on the school census as compared with 85% in the 1940 Roll.

When off-reservation Navajos are compared in the two records, school census under-enumeration increases about 50%.

In another test of possible added information that could be secured from school census records a sample of 100 individuals was drawn from each of the five sub-agency census offices. When these 500 cards were matched against the records in the 1940 Roll, 21 (5%) could not be located. This number was reduced to 17 when all records in the Office of Vital Statistics were searched. The results of this test are in Table 10 (page 28).

Residence and Vital Status Data.

Whether or not new individuals or additional identifying information can be secured from the school census records will not, however, have a bearing on the necessity for matching the data from the Office of Vital Statistics with the school census records. The latter carry the only available information on residence and this is indispensable if the population register is to be perfected through field work.

The same matching operation undertaken to secure residence data would also make possible the separation of individuals into those recorded as living in the school census and those whose vital status remains undetermined. This knowledge would be of some assistance in the preparation of field check-lists of individuals for determination of vital status.

The I. B. M. Census Cards.

Data from the five sub-agency school census offices is collected and punched onto I. B. M. cards which are maintained in the data processing section of the Gallup Area Office.

As indicated in Table 10, and in our Pine Springs study, matching the school census lists against the I. B. M. cards by census number indicates that about fifteen percent will not be found on I. B. M. cards. The great saving that will result from using I. B. M. cards in the operation, however, suggests that they should be used. This will require an intensification, and possible revision, of the communication system between the sub-agency offices and the central data processing office.

Approximately six to ten percent of the individuals in school census records do not have census numbers. Another two ~~000~~ or ~~000~~ percent carry a different census number than assigned the same individual in the Office of Vital Statistics. A certain amount of clerical matching, as well as machine matching will therefore be necessary in this operation.

References to Tables 8 and 9 (pages 17 and 19) will show the extent of under-enumeration in the I. B. M. records when compared with the sub-agency school records and the 1940 Roll. Table 10 gives the result of our comparison of records on 500 individuals selected at random from sub-agency files with I. B. M. cards. Of the 500 individuals, 421 (84%) were located in the I. B. M. record.

TABLE 10

Data on Individuals Secured from Sub-Agency School Records Compared with Other Records

	Cases	School Census	%	Roll Book	%	Num. C. F.	%	I. B. M.	%
Name	500	500	100.0	479	95.8	473	94.6	421	84.2
Census No.	500	454	90.8	476	95.2	473	94.6	421	84.2
D. O. B.	500	455	91.0	477	95.4	366	73.2	418	83.6
Rel. to Head	500	325	65.0	476	95.2	*	----	421	84.2
Father's Name	500	298	59.6	390	78.0	388	77.6	**	----
Father's No.	500	272	54.4	372	74.4	329	65.8	**	----
Mother's Name	500	309	61.8	411	82.2	303	60.6	**	----
Mother's No.	500	287	57.4	386	77.2	265	53.0	**	----

* Data not on cards.

** Data not directly available from I. B. M. cards

Other Records.

No tests were conducted to discover the possible usefulness of other Bureau of Indian Affairs and Navajo tribal records. Except for the allotment and probate records none could be expected to supply significant information on kinship and, for other data, available records could not be expected to be any more accurate than the OVS and School Census data.

The most important supplementary records, with identification by census number, are the following: allotment and probate, grazing permit, relocation, welfare and food distribution, voter registration, and chapter membership.

The best of these is unquestionably the allotment and probate records. About 4,185 allotments of 160 acres each were given to as many individual Navajos mostly between 1908 and 1922. About 1,400 of the original allottees were thought to be alive in 1961.* Identification records on all original allottees and their heirs are now being prepared in the newly established central realty office of the Bureau of Indian Affairs at Phoenix. Because of the legal nature of the record, information on these individuals would probably prove to be reasonably accurate and complete. Data on vital status would be particularly important.

Summary.

The high cost of field work in the Navajo country would make it advisable to explore all possibilities where information on Navajos can be secured from records. The quality of the record, and the cost of processing, would, of course, be determining factors.

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* Robert Young, Navajo Yearbook, Bureau of Indian Affairs, Window Rock, Arizona, 1961, pp. 264-65.

At the very least, individuals secured from the 1940 Roll must be matched against sub-agency school census records to obtain most recent residence of on-reservation families. This can be done at minimum cost by matching against the school census I. B. M. cards, but these must first be reconciled with the original data maintained at the sub-agencies.

Access to data in the 1928 Roll will probably have to be accomplished through clerical, rather than machine, matching. Individuals born before 1935, for whom parentage data is lacking, could be matched against 1928 Roll book data in the numerical family cards, numerical cards and, if necessary, against the 1928 Roll books themselves.

The excellent condition and full data contained in the numerical card file on individuals who have been enrolled since about 1950 suggests that machine matching of these cards against the 1940 Roll data would be advisable. A test would have to be made to discover whether or not added data would justify the cost of the matching operation.

Accumulated birth and death certificates would, of course, have to be processed. This work, as explained above, could be done most efficiently after the 1940 Roll is converted to a system of individual cards.

Experience in the preparation of population registers for the Papago, Pima and Colorado River tribes suggests that miscellaneous records of Indians cannot profitably be matched against a population register. The principal reason for this is that relatively few new individuals are added by this process and the usefulness of such records for securing additional identifying data, or for correcting data already secured, is usually destroyed by their low level of accuracy.

The exception to this general rule is found in the Bureau of Indian Affairs allotment and probate records. A test should be made, therefore, to determine the extent of corrections and additions that might be made by matching the allotment record cards, now being perfected, against the 1940 Roll.

At the very least, the preparation of the population register secured from the 1940 Roll for later perfection through field work, will require matching with some of the data in the 1928 Roll (or associated records), the numerical card file and the school census records. The major task will be the reconciliation of sub-agency records with I. B. M. cards or, failing this, a direct matching of Office of Vital Statistics records against sub-agency records. The entire operation, in any event, will be on about the same scale in time and cost as the transcription of the 1940 roll and its conversion to a tape or punched card record.

PERFECTING THE REGISTER

Data from records, in all probability, will provide an enumeration of from 95% to 97% of all living Navajos, on and off the reservation. Approximately 80% will be fully identified and about one third of these placed in three generation lineages. Most recent residence, by school district, will be known for about 80% of on-reservation residents and place of family origin for about 80% of all Navajos.

Perfecting the register would, therefore, be aimed at securing the relatively few individuals not enumerated, completing identification data, particularly kinship and residence, and bringing vital status information up to date.

There are a number of possible ways in which this work could be done. Whatever method is used, however, would need to be based upon a reorganization and coordination of the two now separate census taking organizations: the Office of Vital Statistics and the school census division of the Branch of Education.

It is our recommendation that the population register which, in effect, is a tribal roll, be kept and maintained in the Office of Vital Statistics. Census numbers could be issued, as now, from the sub-agency census offices but only on the basis of identification established by reference to the population register, a copy of which could be maintained at each sub-agency office, or on the basis of special clearance from the Office of Vital Statistics.

The school census operation is interested in the residence of reservation families and in school attendance. Check lists, from the register, arranged by kin groups and by last known residence in the school district, would be provided to the school districts for annual verification. Any changes in residence and any corrections of errors in the register would be transmitted to the Office of Vital Statistics.

It is at this point that a decision must be made as to the function of the school census operation. It should probably continue as the field branch of a total census operation. Instead of sending information into its own central office, however, information should be sent through the sub-agency offices to the Office of Vital Statistics. This being the case, enumerators connected with the various school district offices, would continue their interest in the identification of all Navajos and, especially, the maintenance of current information on residence for both reservation and non-reservation residents.

Information required by the school system, such as attendance in school, grade attained, or reason for non-attendance should be recorded and tabulated in a system separate and apart from the Office of Vital Statistics. School principals, as in now the case, may also want to maintain records of households where children are not living with their own parents.

Given this type of organization, with all work based upon duplicate sets of a master population register, there are a number of possible ways in which the register can be perfected.

One possible method would be no more than an intensification and expansion of the work now being done by school principals and sub-agency census clerks. This would be an on-going program designed to make corrections and to secure missing identification data, particularly on off-reservation Navajos. For the first few years, at least, it would probably be advisable to use some specially trained enumerators in the school census part of the operation.

An alternative method would involve a special program of field enumeration, apart from the school census, designed to bring the register up to date, and to perfect it, within the shortest possible time.

The design for such a field operation has been worked out in connection with the construction of population registers for

the Papago, Pima-Maricopa, and Colorado River tribes. This consists, essentially, of the preparation of family lists, and the consolidation of family lists into lineages, which are then used in the field as check lists in interviews with kinsmen and neighbors.

The method thus calls for field concentration on those relatively few individuals for whom full identification data has not been secured and the correction of errors in kinship affiliation.

The United States Census method of house-to-house enumeration is not necessary and, in fact, is not possible for Navajos living in areas outside the reservation.

Prior use of the method has shown that knowledge with respect to individuals not present at the time of the field work can be secured with a high level of completeness and accuracy when their kinsmen and neighbors have a prepared list to work from. Informants, asked to concentrate on possible errors and missing items of information, can work effectively.

Variables which determine the completeness of data and the level of accuracy are the closeness of the kinship relationship or residence as between the informant and the individual on whom information is desired and the completeness of the kinship lists taken into the field.

The inefficiency of working without lists and with relatively few informants was demonstrated in our attempt to collect genealogies in the field. In the case of the genealogy study a random sample of 25 informants was selected from different sections of the reservation who were to supply, insofar as they could do so, the names and census numbers of their patrilineal or matrilineal kinsmen. Records on a total of 672 individuals were thus collected. When this data, by unit families, was compared with information in the Office of Vital Statistics it was discovered that 170 members of the families, listed in office records, had not been mentioned by informants. In most instances the failure was

traced to the kinship distance between the informants and the individuals that should have been reported.

The result of working from incomplete records was demonstrated in the Pine Springs field project. In the first round of field work, using only records from I. B. M. tab sheets and the sub-agency school census, where data on parentage is much less complete than in the Office of Vital Statistics, we identified the names of both parents of 223 individuals. After processing these records through the Office of Vital Statistics, adding new data, we returned to the field for another round of field work and found the names of both parents of 427 individuals out of a final total of 445.

Field work is, of course, the only way in which vital status can be determined with any degree of accuracy. This data is important for any attempt to assess the size of the Navajo population, whether this is a total population, a service population or a reservation population. The population at risk must of course be known before morbidity rates, for example, can be established.

Once the population register is perfected on this score, its future maintenance should not be too difficult since the efficiency of the system for registering births and deaths has now been greatly improved and will soon reach acceptable standards.

CONCLUSIONS

Any attempt to establish a fully reliable system of identification of members of the Navajo Tribe, or any similar group of Indians, must rest upon a master record which contains the name, sex, date of birth, last known residence, name of the father and maiden name of the mother of each individual.

This is a "birth certificate" or "triangle" system where positive identification rests primarily upon the location of an individual in terms of his parents and, through them, his lineal kinsmen. It contrasts with the "household" system now used in keeping census records on the Navajo Reservation.

Tests have shown that records in the Window Rock Office of Vital Statistics can be converted to a "birth certificate" system and that the resulting record will identify about 80% of all Navajos now living on the reservation by name, census number, year of birth, sex, tribe, father's name and number and mother's name and number. Another 15% will be identified by name, number, sex, year of birth, tribe and, in most instances, by some information on one or both parents. It is very likely that almost as many off-reservation Navajos can be similarly identified.

Kinship and census number information of this level of completeness is not available from other records. Conversion to a kinship identification system must therefore start with Office of Vital Statistics records. They contain, however, two deficiencies. There is no residence data and reliable vital status information is lacking.

In order to correct this, and other deficiencies, it is recommended that data contained in the Office of Vital Statistics be transcribed and converted to a system of individual tape or punched card records and that automatic data processing techniques be employed in a matching operation with sub-agency school census records in order to secure from them the information they contain on residence and vital status.

The only remaining serious weakness of the Navajo population register at this point would be a lack of knowledge of the vital status of about 35% of the individuals in the record and a lack of knowledge of the residence of large numbers of Navajos now living off the reservation. Matching against other records could provide some of this information. In the end, however, field work will be required to reduce these deficiencies and to bring the register to any pre-determined level of completeness and accuracy. Our experience on other reservations and our Navajo studies have shown that through the use of lists of lineage members a high level of accuracy can be secured in the gathering of information on individuals through interviews with kinsmen and neighbors. House to house enumeration would thus not be necessary and, in fact, in the case of off reservation residents, it would be impossible.

The establishment of a Navajo population register as outlined above would have the following principal advantages:

1. A legally established tribal roll could be secured and maintained with minimum difficulty.

2. A master record of positively identified members of the Navajo Tribe, registered by census number, would make possible the use of automatic data processing techniques in the maintenance and use of all Bureau of Indian Affairs, Public Health Service and Tribal records pertaining to individuals.

3. Information in such fields as health, family economics, employment, residence, and the like, could be secured cheaply and efficiently through record processing and survey research techniques.

4. Cross-indexed records, including an alias file, would increase the efficiency and cut the costs of services now provided by the Office of Vital Statistics.

5. Positive identification, and the use of kinship and residence lists, would alleviate existing data processing difficulties, increase the efficiency and reduce the time now required in the preparation of annual school district census reports.

6. The identification of all Navajos, on and off the reservation, would eliminate many difficulties now encountered in attempting to deal with a shifting tribal population in terms of knowledge limited to reservation residents at a given time.

Alternatives.

The present system of limited identification of individuals in the sub-agency school census records is probably adequate for the segment of the Navajo population with whom school principals are required to deal. Census number errors and omissions, however, prevent an accurate matching of individual district reports and the preparation of consolidated data.

A shift to a birth certificate form of identification is recommended if the school census is not to be tied into a master record of all Navajos. In the course of time, under this method, identification could be perfected and errors and omissions in the use of census numbers corrected. School principals, of course, for their own purposes, would want supplementary information on the nature of the household in which their students reside.

Only a further study of the use of a master Navajo record in the school census operation could determine its relative benefits in terms of time and cost, as opposed to considerations of accuracy.

In the maintenance of a tribal roll and an office of vital statistics there is no alternative to our proposal for the transcription of data and the establishment of a system of individual records on tape or punched cards.

Existing records are disintegrating and must be copied. Since this is necessary, a reorganization of the system of record keeping should follow. By reducing the information to a system which would permit data processing and the automatic printing of various types of lists, the following improvements, now virtually demanded by the growing magnitude of the record, would result:

1. A cross-index of names and numbers, not now available, could be produced.

2. Identification of individuals through their parents, already found necessary and in use, could be systematized and the cumbersome and inefficient "household" system eliminated.

3. New data and corrections would need to be entered into the system only once. The existing operation calls for entries into three different sets of records.

4. The printing of lists by name, number, residence, and kinship group would permit ready matching and eliminate the excessive time now spent in locating individuals in the record. In large part, for example, this would solve the problem of processing birth and death certificates which is now an excessively inefficient and time consuming task.

5. The indispensable virtues of the existing system, which contains historical data for the identification of individuals and the establishment of tribal membership, would be retained.